Sample Questions for the new GCSE in Mathematics
Foundation Tier (Grades 1-5: equivalent to current grades G-C)

Example 1
Liam, Sarah and Emily shared some money in the ratio 2 : 3 : 7
Emily got £80 more than Liam.
How much money did Sarah get? **(3 marks)**

Example 2 (non-calculator)
Modelling the planet Mercury as a sphere, it has a radius of 2440 km.

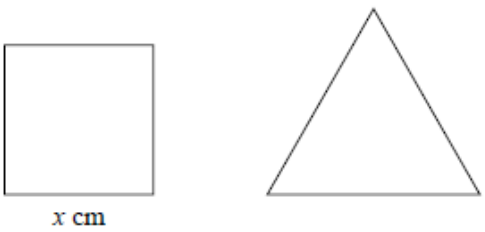
(a) (i) Work out an estimate in square kilometres for the surface area of Mercury.
(ii) Without carrying out a further calculation, give evidence to show whether your method gives you an underestimate or an overestimate for the surface area of Mercury.

In July 2013, the spacecraft Messenger was near Mercury at a distance of 9.75×10^7 km from Earth.

Taking the speed of light to be 3×10^8 m/s,

(b) Work out how long it takes light to travel a distance of 9.75×10^7 km. **(6 marks)**

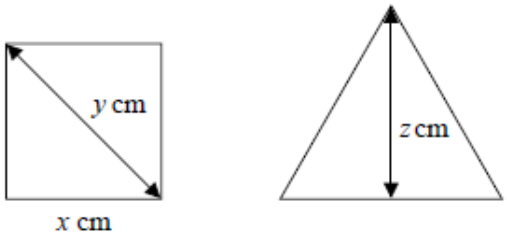
Example 3
Here are a square and an equilateral triangle.



The length of a side of the square is x cm.
The length of a side of the equilateral triangle is 2 cm more than the length of a side of the square.
The perimeter of the square is equal to the perimeter of the equilateral triangle.

(a) Work out the perimeter of the square.

Here are the same square and the same equilateral triangle.



The length of the diagonal of this square is y cm.
The height of this equilateral triangle is z cm.

(b) Which has the greater value, y or z?

(7 marks)

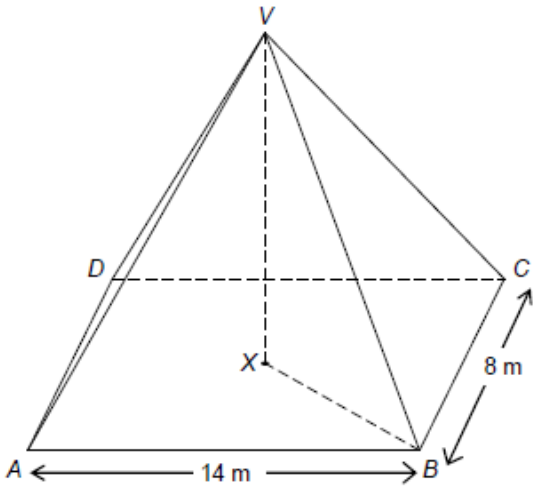
Sample Questions for the new GCSE in Mathematics
Higher Tier (Grades 4-9: equivalent to current grades C-A*)

Example 1

A car has an initial speed of u m/s.
The car accelerates to a speed of $2u$ m/s in 12 seconds.
The car then travels at a constant speed of $2u$ m/s for 10 seconds.
Assuming that the acceleration is constant, show that the total distance, in metres, travelled by the car is $38u$. **(4 marks)**

Example 2

The volume of a pyramid = $\frac{1}{3}$ x area of base x perpendicular height
$VABCD$ is a rectangular-based pyramid with volume 336 m^3
X is the centre of the base, directly below V.

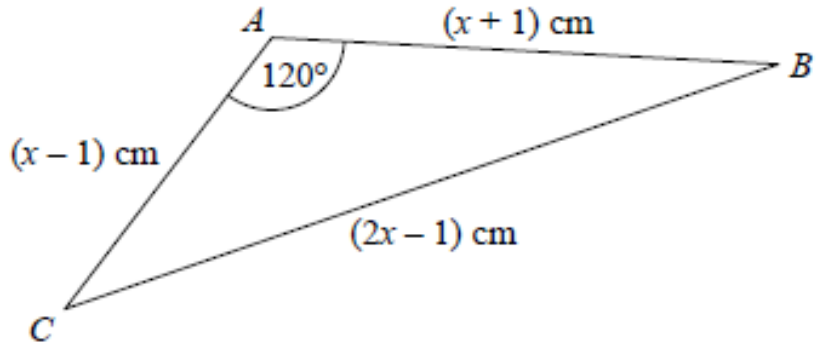


Work out the angle between VB and the base.

(6 marks)

Example 4 (non-calculator)

The diagram shows triangle ABC.



The area of triangle ABC is $k\sqrt{3}$ cm^2.
Find the exact value of k. **(7 marks)**